

# The Art and Science of Surgery: Do the Data Support the Banning of Surgical Skull Caps?

Arturo J. Rios-Diaz, MD; Guillaume Chevrollier, MD; Hunter Witmer, MD;  
Christine Schleider, MS, BSN, CNOR; Scott Cowan, MD; Michael Pucci, MD;  
Francesco Palazzo, MD

Department of Surgery, Thomas Jefferson University Hospital. Sidney Kimmel Medical College, Philadelphia University and Thomas Jefferson University. Philadelphia, PA

No disclosures



# Background

- In the U.S., surgical site infections (SSIs)
  - Account for up to **300,000** hospital acquired infections/year in the U.S.
  - Occur in approximately **2-5%** of patients undergoing surgery
  - Account for **20%** of all **hospital acquired infections**

Anderson DJ et al. Strategies to prevent surgical site infections in acute care hospitals: 2014 update. Infection control and hospital epidemiology. 2014;35(6):605-27.



# Background

- In 2012, the Association of periOperative Registered Nurses (AORN) guidelines recommended against skull caps



## What's Wrong With This Picture?

- Short skull caps should not be used because they do not fully cover hair.
- Hoods may be required to cover facial hair.
- Falling skin squames and hair potentially harbor pathogens and may contribute to surgical site infections.

Image taken from: Braswell ML, Spruce L. Implementing AORN recommended practices for surgical attire. AORN journal. 2012;95(1):122-37; quiz 38-40.



# Background



## *“Recommendation IV*

*All personnel should cover their head and facial hair when in the semirestricted and restricted areas. 1(p62) Hair coverings should cover facial hair, sideburns, and the nape of the neck. Perioperative nurses can help minimize the risk of surgical site infections by covering head and facial hair, which prevents skin squames and hair shed from the scalp from falling onto the sterile field. 17, 18 Skull caps are not recommended because they do not completely cover the wearer's hair and skin; they fail to cover the side hair above and in front of the ears and the hair at the nape of the neck (Figure 8). Perioperative nurses can talk with their department managers and materials management department personnel to eliminate the availability of skull caps. Providing bouffant caps in a variety of sizes will allow perioperative team members choices when converting to bouffant caps over skull caps.”*



# Background



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# Background and Objective



- Joint Commission (JC) supported this measure, prohibiting of the use of surgical skull caps in the OR
- At the end of December 2015, skull caps were banned from the OR in our institution favoring bouffant caps
- Data supporting this measure are limited and have been questioned in recent studies

**Objective:** We aimed to assess the impact of this policy on SSI occurrence at our institution

# Methods

- **Data source:** ACS National Surgical Quality Improvement Program 2015-2016
- **Included:**
  - All patients in our institution undergoing any surgical procedures classified as clean or clean-contaminated, 12 months pre- and post-headwear policy adoption
- **Excluded:**
  - Orthopedic and vascular surgery procedures, incomplete 30-day follow up, sepsis and active infection at time of surgery

**2,341** cases 12 months pre- and post-intervention

**Excluded:**

- **84** contaminated
- **130** dirty/infected
- **2** SSI present at time of surgery
- **47** sepsis
- **58** orthopedic and vascular procedures
- **119** lost of follow up

**1,901** clean and clean contaminated cases

760 pre-intervention

1141 post-intervention

# Methods

- **Analysis:**
  - **Demographic and clinical variables:** age, sex, race/ethnicity, obesity, steroid/immunosuppression, smoking status, cancer, elective, wound classification
  - **Primary outcome:** any type of SSI and its association with the headwear policy
  - **Statistical analysis:** Descriptive statistics, Chi-square tests and multivariate logistic regression

# Results

- 1,901 patients undergoing 1,950 procedures:
  - 40% before and 60% after the headwear policy adoption
  - Most common procedures:
    - Colectomy (18%)
    - Pancreatectomy (13.5%)
    - Ventral hernia repair (8.9%)

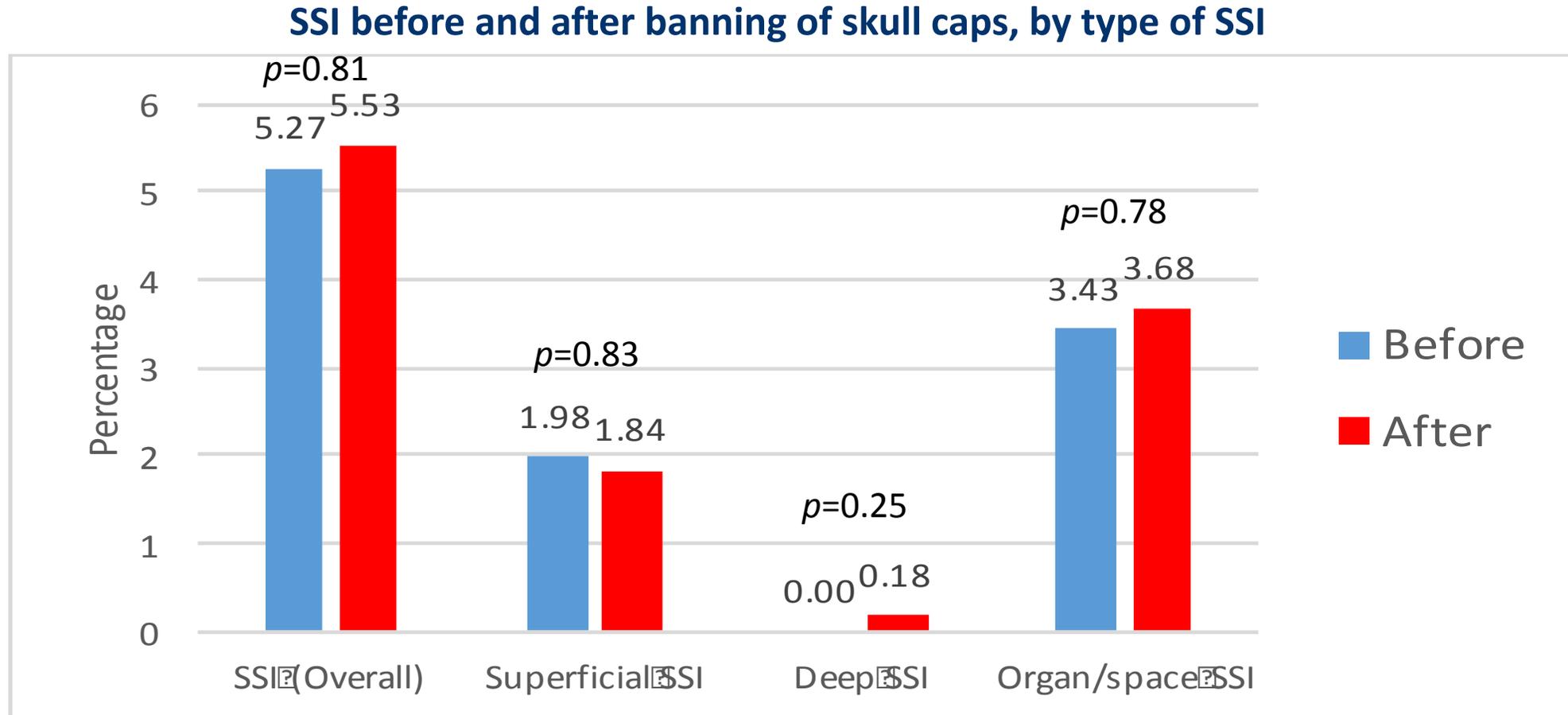
# Results

## Demographic and clinical characteristics

	Before (n=760)		After (n=1141)		<i>p</i>
	n	%	n	%	
<b>Clinical Characteristics</b>					
Age, median (IQR)	57.91	(46.9-67.2)	59.75	(48.5-68.9)	<b>0.01</b>
Male	306	(40.26)	644	(43.56)	0.15
Race/ethnicity					0.20
White	532	(70)	830	(72.74)	
Black	170	(22.37)	217	(19.02)	
Hispanic	25	(3.29)	42	(3.68)	
Asian	19	(2.5)	39	(3.42)	
Other	14	(1.84)	13	(1.14)	
Obese (BMI > 30)	322	(42.37)	402	(35.23)	<b>&lt;0.01</b>
Diabetes	114	(15)	152	(13.32)	0.30
Steroid	40	(5.26)	59	(5.17)	0.93
Cancer diagnosis	195	(25.66)	286	(25.07)	0.77
Smoker	123	(16.18)	143	(12.27)	<b>0.02</b>
Elective	654	(86.05)	975	(85.45)	0.71
<b>Wound Classification</b>					
Clean	293	(38.55)	501	(43.91)	<b>0.02</b>
Clean contaminated	467	(61.45)	640	(56.09)	

# Results

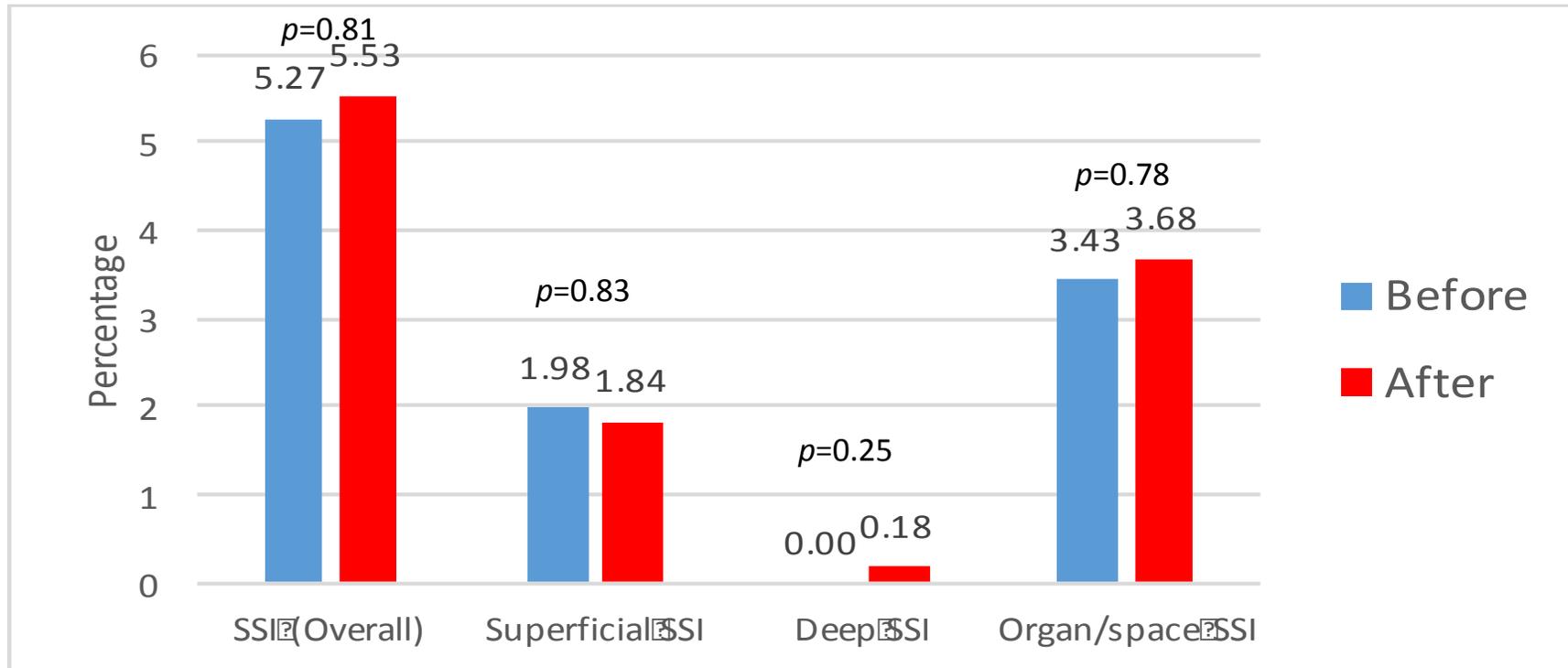
- Overall SSI 5.4%. No difference in SSI before and after headwear policy adoption ( $p=0.81$ )



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SSI before and after banning of skull caps, by type of SSI



- Banning of skull caps was not associated with changes in SSI (OR 1.12 [95% CI 0.73-1.71];  $p=0.59$ ).** Multivariate logistic regression controlling for age, gender, race/ethnicity, obesity, diabetes, cancer diagnosis, smoking status, steroids or immunosuppression, elective case, clean case classification

# Limitations

- Retrospective and single institution nature
- Confounders such as operative technique and volume
- Different size cohorts: NSQIP procedure-targeted registry

# Conclusions

- In our institution, the banning of skull caps from the operating room was not associated with decreased SSIs
- The adoption of guidelines targeted to optimize patient care should be welcomed by surgeons but policies must be truly based on high level of evidence if they are to be implemented at a national level
- Further studies are warranted to assess the validity current JC headwear guidelines

# Recommendations

- Concerted effort between the JC, the AORN, the ACS, the CDC, hospitals' operating room committees, and other stakeholders to review and use the pertinent available data to achieve a consensus and adjust current surgical headwear policies accordingly

# Thank you!

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